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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/729,177	12/05/2000	Win Vanderbauwhede	Q61789	6597

7590 07/09/2004

SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC  
2100 Pennsylvania Avenue, N.W.  
Washington, DC 20037-3213

EXAMINER
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TRAN, CON P

ART UNIT	PAPER NUMBER
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2644

DATE MAILED: 07/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/729,177

Applicant(s)

VANDERBAUWHEDE ET AL

Examiner

Con P. Tran

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 May 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Applicant's submission filed on May 21, 2004 has been entered.

### ***Priority***

2. Acknowledgment is made of applicants' claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. European Patent Office 99403062.5, filed on December 6, 1999.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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4. **Claims 1-2, and 6-7** are rejected under 35 U.S.C. 102(b) as being anticipated by Arnon U.S. Patent 4,757,530.

Regarding **claim 6**, Arnon teaches an adaptive hybrid for echo cancelling in a communication line system (see Figs. 1, 2a, 2b, and respective portions of the specification; col. 1, lines 28-46; col. 2, lines 26-32), comprising:

a hybrid comprising tunable passive elements (balance network 32 is considered as a part of hybrid 10; see Fig. 1; col. 2, lines 33-54); and

digital control means (correlation-detector and adjusting means 34 including register 136, up/down counter 110, Fig. 1, 2a, 2b) coupled to the hybrid (col. 2, lines 26-32), the digital control means controlling the values of the tunable passive elements to reduce a transmission return loss gain in the hybrids (col. 3, lines 5-21), the transmission return loss gain being based upon an output transmission voltage from the hybrid and an input transmission voltage to the hybrid (col. 4, lines 45-63).

Regarding **claim 1**, this claim is essentially similar to Claim 6 and is rejected for the reasons stated above regarding that claim. It should be noted that hybrid (10) and balance network (32) is capable forms part of the analog front end of the communications line system (col. 1, lines 33-38).

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Regarding **claims 2 and 7**, Arnon further teaches wherein a scaling factor (curve A, B, Fig. 3; co. 4, lines 45-63) is used for adjusting the tunable passive elements (col. 3, lines 25, lines 37, Figs. 1, 2a, 2b).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claim 3** is rejected under 35 U.S.C. 103(a) as being unpatentable over Arnon U.S. Patent 4,757,530.

Regarding **claim 3**, Arnon method according to claim 1. Arnon teaches increase transhybrid loss so to reduce transhybrid signals (col. 2, line 60 – col. 3, line 4). However, Arnon does not explicitly show the digital control means (correlation-detector and adjusting means 34 including register 136, up/down counter 110, Fig. 1, 2a, 2b) adjusts the tunable passive elements of balance network (C1, R1, R2) until a zero value of the transmission return loss gain is obtained. It would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust adjusts the tunable passive elements (C1, R2)

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until a zero value of the transmission return loss gain is obtained for purpose of balance the balance network as suggested by Arnon in col. 3, lines 35-37.

7. **Claims 4-5, and 8-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Arnon U.S. Patent 4,757,530 in view of Kakuishi U.S. Patent 5,287,406 (cited by applicants).

Regarding **claim 4** Arnon method according to claim 3, wherein a scaling factor (by dividing input amplitude domain into four regions; col. 3, lines 50-55) is used for adjusting adapting the tunable passive elements (capacitor and resistor banks; col. 3, lines 38-59), and the hybrid comprises a hybrid bridge with two branches (see Fig. 1), comprising two tunable passive impedances in series in one branch (R1, C1), the other branch has one tunable passive impedance (R2) and one fixed passive impedance (C2), one being a tunable balance impedance (R1, R2). It would have been obvious to replace the fixed passive impedance C2 by a tunable capacitor in order to provide a flexible impedance value selection.

However, Arnon does not explicitly show the tunable passive impedances being tuned such that the value of the tunable balance impedance approximates as close as possible the scaled impedance value of the parallel circuit of the line termination resistance in transmission paths of the hybrid bridge and the line impedance.

Kakuishi teaches the impedance Z obtained by viewing the two-wire line depends on the length and type of cable, a plurality of impedance Zx elements

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are selectively used. The most typical impedance  $Z_x$  is equal to  $Z'/2$ , in which  $Z'$  is a standard terminating impedance of a system (col. 2, line 48 – col. 3, line 38) in order provide a simple and less expensive hybrid circuit (col. 4, line 1-2).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was filing to incorporate such teaching as taught by Kakuishi with adaptive method adaptive hybrid of Arnon for purpose of providing a simple and less expensive hybrid circuit, as suggested by Kakuishi in column 4, lines 1-2.

Regarding **claim 5**, Kakuishi further teaches the hybrid comprises a current to voltage converter (99, Fig. 4), wherein the feedback impedance of which being adjusted so as to be equal to the tunable balance impedance (90; col. 3, lines 16-38).

Regarding **claim 8**, Arnon teaches the device according to claim 6. Arnon does not explicitly show the hybrid comprises a current to voltage converter. Kakuishi teaches a hybrid characterized in that the hybrid comprises a current to voltage converter (99, Fig. 4).

Regarding **claim 9**, Arnon teaches a hybrid comprises a hybrid bridge with two branches (see Fig. 1), comprising two tunable passive impedances in series in one branch ( $R_1$ ,  $C_1$ ), the other branch has one tunable passive impedance ( $R_2$ ) and one fixed passive impedance ( $C_2$ ), one being a tunable balance

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impedance (R1, R2). It would have been obvious to replace the fixed passive impedance C2 by a tunable capacitor in order to provide a flexible impedance value selection.

Regarding **claim 10**, Arnon further teaches wherein the tunable balance impedance comprises a first tunable resistor (R2), in parallel with a series connection of a second tunable resistor (R1) and a tunable capacitor (C1), and is capable in parallel with a fixed value resistor.

Regarding **claim 11**, Arnon in view of Kakuishi teaches the device according to claim 10. Arnon in view of Kakuishi teaches further teaches wherein the fixed value resistor is capable to have the same resistance value, as the line termination resistors in the transmission paths of the hybrid bridge, scaled with a scaling factor.

Regarding **claim 12**, Arnon in view of Kakuishi teaches a hybrid comprises a hybrid bridge with two branches (see Fig. 1), comprising two tunable passive impedances in series in one branch (R1, C1), the other branch has one tunable passive impedance (R2) and one fixed passive impedance (C2), one being a tunable balance impedance (R1, R2). It would have been obvious to replace the fixed passive impedance C2 by a tunable capacitor in order to provide a flexible impedance value selection; the value resistor is capable to



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have the same resistance value as the line termination resistors in the transmission paths of the hybrid bridge, scaled with a scaling factor.

Regarding **claim 13**, Kakuishi further teaches the hybrid comprises a current to voltage converter (99, Fig. 4), the feedback impedance of which being adapted so as to be equal to the tunable balance impedance (90).

Regarding **claim 14**, Arnon in view of Kakuishi teaches device according to claim 6. Kakuishi further teaches wherein the digital control means comprises a microprocessor (see Fig. 5; col.5, lines 6-15).

Regarding **claim 15**, Arnon in view of Kakuishi teaches device according to claim 9. Kakuishi further teaches wherein the tunable passive elements are part of an integrated circuit (see Fig. 5; col.5, lines 6-15).

### ***Response to Amendment***

8. With respect to rejection under 35 U.S.C. § 112 (2<sup>nd</sup> para.), Claim 1 has been amended. Accordingly, the rejection is withdrawn.

### ***Response to Arguments***

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9. Applicant's arguments with respect to claims 11-15 have been considered but are moot in view of the new grounds of rejection.


**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Con P. Tran, whose telephone number is (703) 305-2341. The examiner can normally be reached on M - F (8:30 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W. Isen can be reached on (703) 305-4386. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Customer Service Office at telephone number (703) 306-0377.

cpt CPJ  
June 28, 2004

  
**FORESTER W. ISEN**  
**SUPERVISORY PATENT EXAMINER**